

Infection Control Basics: Healthcare-Associated Infections (HAI) in Long Term Care Facilities

Infectious Disease Epidemiology Section
Office of Public Health
Louisiana Dept of Health 800-256-2748
www.infectiousdisease.dhh.louisiana.gov

Infection Control Program Infrastructure

Objectives of IC in LTCF

The goal of infection control is to prevent transmission of infection:



- Explain why infection prevention and control is important in assisted living facilities and nursing homes
- Describe transmission and chain of infection
- Differentiate infection, colonization and contamination
- Understand precautions and isolation
- List infections and risk factors in the elderly
- Explain why surveillance is important
- Explain how to identify and report an outbreak

Principle Functions of Infection Prevention Programs

1. To obtain and manage critical data and information, including surveillance for infections
2. To develop and recommend policies and procedures
3. To intervene directly to prevent infections and interrupt the transmission of infectious diseases
4. To educate and train healthcare professionals (HCP), patients, and nonmedical caregivers

Infection Prevention Team

- The core of the infection prevention and control program is the infection preventionist
- Occupational health can also participate on the team
- Team is responsible for carrying out all aspects of the infection prevention and control program
- Facility may have an infection prevention committee (IPC) that functions at the central decision-making and policy-making body for infection prevention
- IPC advocates for prevention and control of infections at the facility
- IPC must be multidisciplinary
- Dissemination of information is a crucial component of the IPC

Being a Successful Infection Preventionist

- Improve leadership strategies and pursue opportunities for self-development
- Work with the IPC to create policy changes that are data-driven and patient-centered
- Possess multiple skills necessary to meet the demands of the evolving healthcare environment



Role of Infection Prevention Professionals

1. Collection and analysis of infection data
2. Evaluation of products and procedures
3. Development and review of policies and procedures
4. Consultation on infection risk assessment
5. Education efforts directed at interventions to reduce infection risks
6. Education of patients and families
7. Implementing changes mandated by regulatory, accrediting and licensing agencies
8. Application of epidemiological principles directed at improving patient outcomes
9. Antimicrobial management
10. Provision of high-quality services in a cost-efficient manner

Organizational Support

- Use basic healthcare epidemiology and other quality improvement tools to improve patient outcomes
- Useful for transitioning evidence-based practices into work routine
- Administrative Support
 - Schedule regular meetings with administrators to whom you are responsible
 - Maintain liaison between the program and administration
 - Increase awareness of the institution's leaders of infection prevention and control program activities



Quality of an Infection Prevention and Control Program

1. Establishing a reliable, focused surveillance program based on the annual risk assessment
2. Streamlining data management activities
3. Analyzing HAI rates
4. Aiming for zero HAI rates
5. Educating staff regarding prevention strategies
6. Identifying opportunities for performance improvement
7. Taking a leadership role on performance improvement teams
8. Developing and implementing action plans that outline the steps needed to accomplish each objective
9. Evaluating the success of action plans in accomplishing the goals and objectives of the infection prevention plan

Long-term Care

- Long-term care (LTC) is an umbrella term that encompasses several different types of facilities to provide care for individuals
- Generally referred to as long-term care facilities (LTCF)
- Spans the spectrum of care from providing short-term, episodic skilled nursing and residential support to chronic care management
- The number of adults in the United States over the age of 60 will rise by nearly 25% by 2030

LTCF v. Hospital Surveillance of Healthcare-Associated Infections

Long Term Care Facilities

- LTCF: Facilities that provide health care to people that are unable to manage independently in the community
- Nursing Homes: Facilities with in-patient beds providing nursing and other services to patient not in acute phase of illness
 - Some residents for years
 - Few temporary post-acute care residents
- Other LTCF:
 - Long Term Acute Care facilities (LTAC)
 - Psychiatric Hospitals
 - Other Mental Health facilities
 - Rehabilitation hospitals
 - Pediatric LTCF



Key Differences: LTC v. Acute

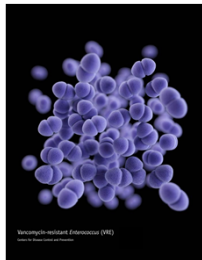
- Key difference and challenge is the concept of residence
- LTCF offers socialization through common activities
- LTCFs generally have common air circulation, which may contribute to infection transmission of pathogens that are airborne
- Emerging, significant risk factor in LTCFs involves enhanced infection risks for colonization or infection with multidrug-resistant organisms (MDRO)

LTACH Risk Assessment

- Annual risk assessment determines goals and objectives for infection prevention and control program
- Important to identify the highest risk concerns and target efforts to specifically address those areas
- Ongoing review throughout the year allows the IP to determine if the strategies are effective
- Communication is vital for an infection prevention program
- IPCC members should meet on a regular basis to review surveillance data, identify areas of concern, plan interventions, define outcome measures, and review/develop policies

Infection Prevention and Control in the LTACH

- LTACH: Long-term acute care hospital
- Early identification of MDRO or *Clostridium difficile* infection and colonization is imperative to limit the risk of transmission
- One study showed that 64% of patients in LTACHs were colonized with MRSA, VRE, or both



The HAI Problems in LTCF and Hospitals are different

Resource/Clientele	Hospitals	LTCF
Residence	Short, few days	Lengthy, years
Patients	All ages	Elderly mostly
Illness	Acute	Chronic
Recovery	Expected	Not expected
Access to lab, imaging...	Easy	More difficult
Ration Nurse to Patient	High	Lower
Socialization	Low importance	High importance

1-LTCF provide care in resident-centric environment. Provide a home-like environment with limited medical care support.

2-LTCF provide care for patients coming from acute care hospital for short-term of more "hospital-like" environment critical for positive resident outcomes.

3-Many are combinations of both

Therefore Infection Control Guidelines must be adapted to LTCF conditions. Guidelines for specific procedures may remain identical

HAI in Louisiana

Variable	Hospitals	Nursing Homes
Number	250 (120 Acute)	280
Beds		35,000
Admissions	500,000	
Patient days	2,200,000	9,000,000
HAI rates / 1,000 patient days	3 to 14	2 to 14
UTI rates / 1,000 patient days	0.2 to 3.5	
Pneumonia rates / 1,000 patient days	0.20 to 3.3	0.3 to 2.5
BSI rates / 1,000 patient days	0.8 to 3.0	
SSI rates / 1,000 patient days	0.03 to 8.0	---
Total infections	16,000	23,000 to 54,000
Death rate / 1,000 patient days	0.60	0.04 to 0.70
Deaths	1,300	360 to 6,300

Device Utilization in Nursing Homes

Utilization rates for:
Urinary Catheters **5% of patients**

Proportion of nursing homes offering:
Infusion therapy **42%**
Peripherally inserted central lines **22%**
Parenteral nutrition **46%**



Infection Control in LTCF

SHEA/APIC Guidelines

AIC special communication

SHEA/APIC Guideline: Infection prevention and control in the long-term care facility

Philip W. Smith, MD, Carol Bennett, RN, MSN, CIC, Suzanne Bradley, MD, Paul Drinka, MD, William Lautenbach, MD, J. Amy Mody, RN, MS, CIC, Louise Brady, MD, Lindsay Hinkle, MD, and Neil Stevenson, MD
July 2008

Long-term care facilities (LTCFs) may be defined as institutions that provide health care to people who are unable to manage independently in the community. This can range from chronic care management or short-term rehabilitation services. The term nursing home is defined as a facility licensed with an organized professional staff and organized beds that provide continuous nursing and other services to persons who are not in the acute phase of an illness. There is considerable overlap between the 2 terms.

More than 15 million residents reside in United States LTCF nursing homes in recent years, the acuity

of illness of nursing home residents has increased. LTCF residents have a role of developing health care-associated infection (HAI) that approaches that seen in acute care hospital patients. A great deal of information has been published concerning infections in the LTCF and infection control programs are readily understood as that setting. This position paper reviews the literature on infection and infection control programs in LTCF and infection control programs based on integrated and targeted practice elements. The recommendations cover the structure and function of the infection control program, including surveillance, education, procedures, outbreak control, isolation, care, and employee health. Infection control measures are also presented.

Hospital infection control programs are well established in the US. Virtually every hospital has an infection control professional (ICP), and many larger hospitals have a consulting hospital epidemiologist. The study on the efficacy of hospital infection control (HIC) programs in the management of acute and chronic infections in LTCFs is limited. Infection control programs that apply standard practices and control measures.

The major elements leading to a HAI are the infection agent, a susceptible host, and a means of transmission. These elements are present in LTCFs as well as in hospitals. It is not surprising, therefore, that almost as many HAIs occur annually in LTCFs as in hospitals in the US.

The last 2 decades have seen increased recognition of the problem of infections in LTCFs, with subsequent widespread development of LTCF infection control programs and definition of the role of the ICP in LTCFs. An increasingly robust literature is devoted to LTCF infection control issues such as the distinctive epidemiology of LTCF infections, the methodology of LTCF infections, outbreak control measures, and isolation. Nevertheless, there is a paucity of data on the methodology of LTCF infection control.

Smith PW, Bennett G, Bradley S, Drinka P, Lautenbach E, Marx J, Mody L, Nicolle L, Stevenson K, July 2008
SHEA/APIC Guideline:
Infection prevention and control in the long-term care facility. Am J Infect Control 2008;36:504-35.

Requirements /Recommendations for Infection Control Program

- Skilled Nursing: 1987 Omnibus Reconciliation Budget Act (OBRA)
- Nursing Homes: Medicare & Medicaid. Requirements for LTCF -HCFA. Final rule. Fed. Register 1991; 56:48826-80
- Occupational exposure to bloodborne pathogens—OSHA. Final rule. Fed Regist 1991;56:64004-182.
- Friedman C et al 1999. Requirements for infrastructure and essential activities of infection control and epidemiology in out-of-hospital settings: a consensus panel report. APIC/SHEA. Infect Control Hosp Epidemiol 1999;20: 695-705.

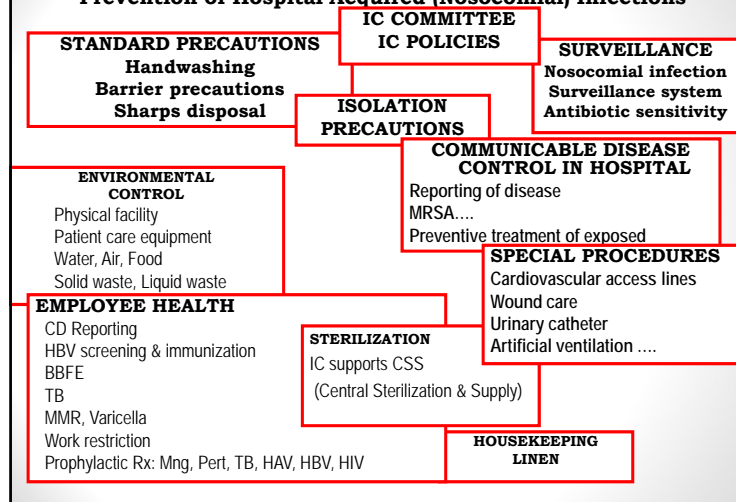
Infection Preventionist & IC Committee

- Responsible for directing infection control
- Familiar with LTCF & resident care problems
- Written job description of IC duties
- With sufficient time and administrative support
- Sufficient IC knowledge base to carry out responsibilities
- Canada's recommends 1 IP /150 to 250 long term beds



Scope of Infection Control

Prevention of Hospital Acquired (Nosocomial) Infections



Definitions

Outbreak Investigations

- Three elements required for transmission: source → susceptible host → mode of transmission
- Outbreaks are prevented by the elements basic to an infection prevention and control program in all healthcare settings
 - Hand hygiene programs
 - Standard and Transmission-Based Precautions
 - Identification and isolation measures
- Communicate with the health department **early** in an outbreak

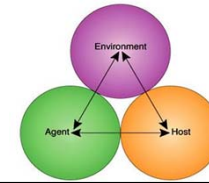
General Principles of Epidemiology

Education

- Education can promote compliance when employees comprehend the impact an HAI or MDRO transmission will have on the patient
- HCP, ancillary department staff, medical staff, and visitors must also be educated

Epidemiology

- Study of the distribution and determinants of disease and other conditions in human populations
- Population-based and is useful for describing health-related phenomena
- Epi methods are used in the measurement of a disease, its determinants, and its distribution in a particular population in question
- Primary purpose of epidemiology is to aid in the understanding of the cause of a disease by knowing its distribution



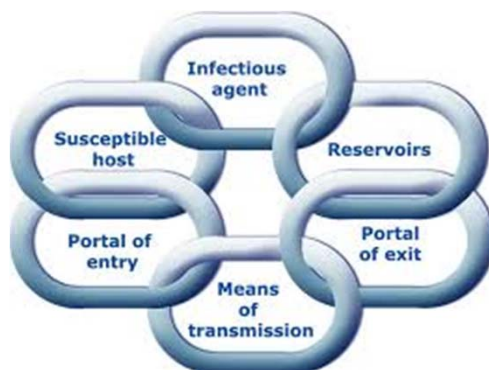
Use of Epidemiology in Healthcare

- The goal is to complete prevention of a disease before any manifestation of that disease occurs
- Early diagnosis and treatment
- Prevention strategies to reduce the risk of transmission, including barrier precautions, immunizations of HCP, and cleaning, sterilizing, and disinfecting
- Applications of disease prevention using information gathered

Portals of Entry and Exit

Portals of Exit	Portals of Entry
Respiratory tract	Respiratory tract
Genitourinary tract	Genitourinary tract
Gastrointestinal tract	Gastrointestinal tract
Skin/mucous membrane	Skin/mucous membrane
Transplacental (mother to fetus)	Transplacental (mother to fetus)
Blood	Parenteral (percutaneous via blood)

The Chain of Infection



Resources

- Bodily-Bartrum M, Franck J, Spaulding L and Zeller J. Chapter 61 – Long-term care. Association for Professionals in Infection Control and Epidemiology Text. 2015.
- Friedman C. Chapter 1 – Infection Prevention and Control Programs. Association for Professionals in Infection Control and Epidemiology Text. 2015.
- Knox Sh. Chapter 62 – Long-term acute care. Association for Professionals in Infection Control and Epidemiology Text. 2015.
- Tweeten S. Chapter 10 – General Principles of Epidemiology. Association for Professionals in Infection Control and Epidemiology Text. 2015.

Questions?

